

3M

Novec™ 1230 Fire Protection Fluid For Marine Applications

Application
Information

When safety matters most.

3M™ Novec™ 1230 Fire Protection Fluid is an advanced, “next-generation” halon replacement, offering a number of important advantages over conventional clean agents and CO₂ in marine applications.

Novec 1230 fluid is based on a proprietary new chemistry from 3M: C₆F₈-ketone. Its low acute toxicity, combined with high extinguishing efficiency, gives Novec 1230 fluid a significant margin of safety, even at relatively high extinguishing concentrations. This makes Novec 1230 fluid ideal for occupied spaces, including engine and pump rooms, paint lockers, and communication and control centers.



Novec 1230 fluid is noncorrosive, non-conductive and evaporates rapidly, so it will not harm delicate electronics, radar, navigation and other equipment. And, unlike foams and powders, it leaves no messy residue to clean up, so systems can remain operational.

The bottom line? With Novec 1230 fluid, you get fast, effective fire protection—without compromising the operation of your systems, the safety of passengers and crew, or the environment.

The long-term, sustainable solution

From its initial development, Novec 1230 fluid was designed to address the global demand for a halon replacement that is safe, effective and not the subject of significant regulatory restrictions or scheduled for phaseout. With zero ozone depletion potential, short atmospheric lifetime and a global warming potential of 1, Novec 1230 fluid has proven to be the first halon replacement to offer a viable, long-term, sustainable solution for marine fire protection.



Created for life.

3M™ Novec™ 1230 Fire Protection Fluid Environmental Properties

Properties	Novec 1230	Halon 1211	Halon 1301	HFC-227ea	HFC-236fa
Ozone Depletion Potential (ODP) ¹	0.0	5.1	12.0	0.0	0.0
Global Warming Potential-IPCC ²	1	1300	6900	3500	9400
Atmospheric Lifetime (Years)	0.014	11	65	33	220
SNAP (Yes/No)	Yes ³	No	No	Yes	Yes

¹ World Meteorological Organization (WMO) 1998, Model-Derived Method

² Intergovernmental Panel on Climate Change (IPCC) 2001 Method, 100 Year 1TH

³ US EPA has expressed its intent to approve.

The commercial sale of Novec 1230 fluid is permitted.

Regulatory Status

- ✓ **USA** TSCA product complies with chemical notification requirements
SNAP: free to sell for streaming and flooding (awaiting final publication)
- ✓ **Europe** ELINCS product complies with chemical notification requirements
- ✓ **Canada** CDSL product complies with chemical notification requirements
- ✓ **Korea** KECI product complies with chemical notification requirements
- ✓ **Australia** AICS product complies with chemical notification requirements
- ✓ **Japan** METI to be notified by December 2002; approval estimated Q2/2003
- ✓ **China** CICS product complies with chemical notification requirements

The Widest Margin of Safety

Because of the complex geometry of engine rooms, communications centers and other shipboard locations, it is difficult to make an accurate calculation of their net volume—used to determine an effective (but safe) agent design concentration.

If a significant portion of a room is filled with piping, conduits, machinery and other obstructions, agent concentration could quickly exceed its NOAEL (No Observable Adverse Effects Level), if discharged at a rate appropriate for its empty volume.

Because Novec 1230 fluid offers a much wider margin of safety than other halocarbon agents, there is less potential that its effective use concentration will exceed safety limits. This also allows the use of automatic control of systems protecting occupied spaces.

With Novec 1230 fluid, you get the stopping power you need to extinguish fires in obstructed spaces—without putting people at risk.*



*Industry standards require egress from a protected enclosure prior to system discharge

Safety Margin

3M[®] Novec[™] 1230 Fire Protection Fluid Safety Margin- Class B Hazards

Agent	Novec 1230	Halon 1301	HFC-227ea	CO ₂
Use Concentration	5.5%	5%	8.7%	34%
NOAEL ¹	10% ²	5%	9%	<7%
Safety Margin	82%	nil	3%	Lethal at design conc.

¹ NOAEL for cardiac sensitization (halocarbons) and effects specific to CO₂

² NOAEL for acute toxicity, including cardiac sensitization

Performance you can depend on

In hundreds of laboratory and field tests around the world, performed by 3M and by independent agencies, Novec 1230 fluid has proven its effectiveness in both flooding and streaming applications.

For example, a fixed fire protection system using Novec 1230 fluid has successfully completed test protocol IMO MSC Circular #848. This protocol tests the ability of a system to effectively extinguish a variety of fires in total flooding applications. The fires occurred in a 500 m³ test enclosure, simulating machinery rooms and pump rooms, and were witnessed by agents from Underwriters Laboratories, the U.S. Coast Guard, Lloyd's Register and the United Kingdom's Maritime and Coastguard Agency (MCA).

Subsequently, Novec 1230 fluid received the Certificate of Type Approval from the MCA, indicating that the fluid is accepted and in compliance with the requirements of:

- The Merchant Shipping Regulation 1998, S.I. 1012.
- The Merchant Shipping Regulation 1998, S.I. 1011.
- 1978 SOLAS Protocol as amended by the SOLAS amendments to date.
- HSC Code - Resolution MSC.36(63).
- The Code of Practice for Safety of Large Commercial Sailing & Motor Vessels.
- The International Maritime Organization MSC/Circ.848.



Easy handling, easy storage

Novec 1230 fluid is an excellent choice for engine and equipment rooms, and other normally-occupied areas of pleasure craft and high-speed craft.

Because it is a liquid at room temperature, and stored at low vapor pressure, agent handling and charging of Novec 1230 fluid systems is greatly simplified. And because the liquid is shipped non-pressurized, refilling after discharge is a simple procedure: open a valve, pour the material into your container, then shut the valve and superpressurize with nitrogen. Containers don't have to be removed offsite, so your assets are left unprotected for the shortest possible time.

The product's liquid state also allows for efficient use of space, requiring about the same number of cylinders as conventional halocarbon agents. The product can be shipped safely by air in bulk quantities, without any regulations or restrictions.

Upgrading an existing fire protection system can be accomplished by reusing the existing system control equipment with the newly installed system designed for use with Novec 1230 fluid.

Compatible with fire system materials

Novec 1230 fluid has been shown to be compatible with typical materials of construction used in fire suppression systems, including stainless steel, carbon steel, aluminum, brass and copper. The material is stable and noncorrosive in its neat form. Long-term testing has demonstrated excellent compatibility with various elastomers used in o-rings, gaskets and other types of seals. However, we recommend that the product not be used with fluoroelastomers, because they are like materials with an affinity for each other and, therefore, incompatible.

3M Resources

3M™ Novec™ 1230 Fire Protection Fluid is supported by global sales, technical and customer service resources, with fully-staffed technical service laboratories in the U.S., Europe, Japan and Southeast Asia.

For more information, please visit our web site at www.3m.com/novec1230fluid

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